

Weekly Report for 12/30/2013

Highlights

- Paper on MgO/Ag photocathode characterization (co-author) accepted for publication in PRL. (Kathy Harkay)
- Paper on ILC damping rings electron cloud effects (co-author) accepted for publication in PRSTAB. (Kathy Harkay)

APS Renewal and Upgrade

- With L. Boon, converted baseline MBA lattice to MAD format. Set up A. Vella to compute the radiation heating on the ID/SCU chamber using synrad3d. Debugged an issue relating to how synrad3d scales the power. Discussed the production runs that A. Vella will do next week. (Kathy Harkay)
- Obtained schematics of the MBA magnets from M. Jaski, and studied ray tracing (in a prior MBA lattice version) from B. Stillwell. (Kathy Harkay)
- Computed the expected radiation heating on a 5-mm and 6-mm ID/SCU chamber in the baseline MBA lattice. Results will be compared with synrad3d. (Kathy Harkay)
- Participated in 4GSR physics meeting (chaired by M. Borland). Discussed upcoming review. Offered to contribute estimates relating to ion effects. (Kathy Harkay)
- Estimated effectiveness of orbit correction on the beam motion. Assumed $1/f$ dependence of noise PSD, f^2 dependence of integral correction, took into account noise attenuation due to solid magnet yoke (attenuation is calculated S. Kim). Suggested budget splitting for all orbit noise sources. Calculated resulting tolerances for electrical and vibrational noise. Wrote tech note "Estimation of orbit correction effectiveness and calculation of related tolerances." (Vadim Sajaev)
- Updated derivation of tolerances for orbit noise. Derived tolerances using orbit amplification factors normalized by square root of beta function at observation point, which is then eliminated when the orbit error is divided by the beam size. Also updated calculations for the latest version of the 7HBA lattice. Updated tech note AOP-TN-2013-057. (Vadim Sajaev)
- Calculated orbit amplification factors for girder motion. Divided quadrupole vibration budget into quadrupole vibration on girders and girder vibration. This relaxed tolerances on ground motion. Updated tolerance numbers for the latest version of the 7HBA lattice. Updated tech note AOP-TN-2013-077. (Vadim Sajaev)

MCR Operations

Storage Ring Operations

- Investigated BPMS for use in orbit control law for 31-ID at their request and will discuss with Sereno. (Karen Schroeder)
- Discussed trip of the SCU compressor when chilled water was shut off in Bldg. 450 with Yury Ivanyushenkov and ways we can inform those responsible for resetting it. An order will be added to contact them whenever operations is aware of pressure bumps or the shut-off of the chilled water. Also discussed the possibility of getting a on/off PV for the compressor to be able to add to the shutdown and operations alarm handlers. (Karen Schroeder)
- J. Dooling and K. Harkay showed M. Merritt et al what beam loss monitor fibers and hardware to move from ID4 to SCU0. (Kathy Harkay)
- Discussed effect of chilled water shutoff on the SCU0 during the shutdown with MD/SCU0 group. Plotted data. Alerted Marty Smith that the Labview system has been out of communication since Dec 19, and he fixed the problem by restarting the PC gateway. (Kathy Harkay)

Procedures

- Accelerator Work for the IT Group (APS_1195114) ACIS PAR RF Bypass (APS_1194656) (Randy Flood)
- Operation of the Synchrotron ACIS (APS_1192808) (Randy Flood)
- Operation of the Storage Ring ACIS (APS_1192745) (Randy Flood)
- Storage Ring Main Machine Protection System (MPD), DCCT, and RF Interface Checkout (APS_1193988) (Randy Flood)
- Storage Ring Local and Main (LMPS) MPS Checkout (APS_1192880) Annual Validation for the Advanced Photon Source Photoinjector Laser Access (Randy Flood)
- Control and Interlock System (LACIS) (APS_1196662) (Randy Flood)

Training

- Graded new operators' COO and ACIS tests (Randy Flood)
- Started training new operators on ACIS, LOTO and controls (Randy Flood)
- Trained new operators on area walkthroughs (Randy Flood)

MCR Operations administrative/misc.

- Wrote operators' schedules for the upcoming run (Randy Flood)
- Reviewed operators' daily effort confirmation sheets (Randy Flood)
- Approved operators' time cards (Randy Flood)
- Approved vacation requests, set up coverage and updated the online schedule (Randy Flood)
- Approve CTLs, IT and Other work requests (Randy Flood)
- Review and clean the asdops mail account at least twice (Randy Flood)
- Check the status of open RMD's (Randy Flood)
- Updated fill history with resolved downtime assignments (Karen Schroeder)
- Generated downtime report and gave to Flood for presentation to OPS Directorate (Karen Schroeder)
- Reviewed and approved four APS procedures (Karen Schroeder)
- Reviewed and approved non-RSS work requests (Karen Schroeder)
- Made formatting changes to html/pdf/excell files to include 2014-2 run and had it published to the web by webmaster. (Karen Schroeder)
- Compiles number of Users hours in Calendar year 2013 for Flood (Karen Schroeder)

APS Machine Studies

Storage Ring Studies

- Updated SCR for ramping power supplies to zero and provided operators with "gentle" shutdown instructions. (Karen Schroeder)
- Continued planning SCU0 heater studies to collect more data for Y. Shiroyanagi's thermal model. (Kathy Harkay)

APS Machine Research and Development

Storage Ring Research and Development

- Continued writing up results detailing the equilibrium emittances in a coupled storage ring. Almost done... (Ryan Lindberg)

Other Research and Development

- Added section on harmonic lasing to XFEL grant proposal to DOE/BES. Reviewed and edited the proposal in collaboration with K.J. Kim, B. Adams, and Y. Shvyd'ko; submitted the proposal to DOE/BES. (Ryan Lindberg)

APS Machine Software

IOC/EPICS/Controls/Linux/Solaris/Linux Clusters/Data Loggers/Simulation software

- Created several new ACIS PV's at the request of the SI group. (Randy Flood)
- Administer the EPICS CVS repository to ensure current versions are installed and conflicts are tracked down and eliminated. (Randy Flood)

Publications, papers and report

- Paper on MgO/Ag photocathode emission characterization accepted for publication in PRL. Primary author from PNNL; other co-authors from PNNL and IIT. (Kathy Harkay)
- Paper on ILC damping rings electron cloud effects accepted for publication in PRSTAB. Primary author from Cornell U; other co-authors from Cornell. (Kathy Harkay)

Meetings, workshops, conferences, committees, LMS related, and reviews

- Submitted an abstract for the 2014 April APS meeting entitled "Beam emittance from ARPES for photoinjectors" (Kathy Harkay)

Safety and Required Training

- Took the fire department on tours of the tunnels and 420 relating to emergency actions. (Randy Flood)
- Took three on-line required training classes. (Karen Schroeder)
- ESH108400 Building/Facilities Safety Orientation (Ryan Lindberg)
- ESH223 Cyber Security Education and Awareness (Ryan Lindberg)
- HR498 Ethics Training (Ryan Lindberg)
- HR720 Statement of Conduct-Employee Certification Form (Ryan Lindberg)
- SEC101 Counterintelligence, Classification, Export Control and Security Refresher (Ryan

Lindberg)

Miscellaneous

- Compiled all stats for the run. (Randy Flood)